

ABSTRACT

A unit for hydrotreating of hydrocarbon crude oil comprising sulfur-containing compounds comprises first catalyst layer 33 and second catalyst layer 38, top space 34 for separating vapor component and liquid component, bottom space 36, and valve tray 35 that divides top space 34 and bottom space 36. Hydrogen released from hydrogen nozzle 40 placed in the bottom space is passed through liquid component that has accumulated in the valve tray and stripping of liquid components is performed. Hydrogen released from hydrogen nozzle 40 is again introduced, to second catalyst layer 38 as a cocurrent with the stripped liquid component. By stripping, it is possible to reduce the sulfur content, the nitrogen content and reduce the aromatic content of the hydrocarbon crude oil when compared to the conventional method. Since the hydrotreating unit has a simple structure, the unit can be easily made by modifying existing units.